Claims

What is claimed is:

1. A method of monitoring coolant within a cooling system, the method comprising:

employing at least one pressure transducer to obtain multiple pressure measurements related to an amount of coolant within an expansion tank of the cooling system; and

determining a rate of volume change of coolant within the expansion tank employing the multiple pressure measurements.

2. The method of claim 1, wherein the employing comprises obtaining successive pressure measurements related to the amount of coolant within the expansion tank of the cooling system, the successive pressure measurements being taken at a known time interval, and wherein the determining comprises employing the successive pressure measurements at the known time interval to determine the rate of volume change of coolant within the expansion tank.

3. The method of claim 2, further comprising automatically determining an immediacy of action to be taken to service the cooling system based on the rate of volume change of coolant within the expansion tank.

4. The method of claim 2, further comprising automatically determining whether a magnitude of the rate of volume change of coolant within the expansion tank is less than a first leak rate set point, and if so, continuing monitoring of coolant within the cooling system, otherwise, determining whether the magnitude of the rate of volume change of coolant within the expansion tank is between the first leak rate set point and a second leak rate set point, and if so, determining whether a volume change of coolant within the expansion tank is a number less than zero, and if not, signaling for corrective action to address an increase in the amount of coolant within the expansion tank.

5. The method of claim 4, further comprising automatically determining whether the amount of coolant within the expansion tank is above a minimum volume threshold, and if not, signaling for the cooling system to be shut down, otherwise, continuing with monitoring of coolant level within the cooling system.

6. The method of claim 4, further comprising automatically determining whether the rate of volume change of coolant within the expansion tank is greater than the second leak rate set point, and if so, signaling for immediate action to be taken to service the cooling system, wherein the immediate action to be taken is dependent upon whether volume of coolant within the expansion tank is increasing or decreasing.

7. The method of claim 1, wherein the employing comprises automatically employing the at least one pressure transducer to obtain multiple differential pressure measurements on the amount of coolant within the expansion tank, each differential pressure measurement comprising a difference in pressure between pressure in a liquid coolant portion of the expansion tank less pressure in a non-liquid portion of the expansion tank.

8. The method of claim 7, wherein the at least one pressure transducer comprises a differential pressure transducer for determining the multiple differential pressure measurement.

9. A system for monitoring coolant within a cooling system, the system comprising:

at least one pressure transducer coupled to an expansion tank of the cooling system, wherein the at least one pressure transducer obtains multiple pressure measurements related to an amount of coolant within the expansion tank; and

means for determining a rate of volume change of coolant within the expansion tank employing the multiple pressure measurements.

10. The system of claim 9, wherein the at least one pressure transducer obtains successive pressure measurements related to the amount of coolant within the expansion tank of the cooling system, the successive pressure measurements being taken at a known time interval, and wherein the means for determining comprises means for employing the successive pressure measurements at the known time interval to determine the rate of volume change of coolant within the expansion tank.

11. The system of claim 10, further comprising means for automatically determining an immediacy of action to be taken to service the cooling system based on the rate of change of coolant within the expansion tank.

12. The system of claim 10, further comprising means for automatically determining whether a magnitude of the rate of volume change of coolant within the expansion tank is less than a first leak rate set point, and if so, for continuing monitoring of coolant within the cooling system, otherwise, for determining whether the magnitude of the rate of volume change of coolant within the expansion tank is between the first leak rate set point and a second leak rate set point, and if so, for determining whether a volume change of coolant within the expansion tank is a number less than zero, and if not, for signaling for corrective action to address an increase in the amount of coolant within the expansion tank.

13. The system of claim 12, further comprising means for automatically determining whether the amount of coolant within the expansion tank is above a minimum volume threshold, and if not, for signaling for the cooling system to be shut down, otherwise for continuing with monitoring of coolant level within the cooling system.

14. The system of claim 12, further comprising means for automatically determining whether the rate of volume change of coolant within the expansion tank is greater than the second leak rate set point, and if so, for signaling for immediate action to be taken to service the cooling system, wherein the immediate action to be taken is dependent upon whether volume of coolant within the expansion tank is increasing or decreasing.

15. The system of claim 9, wherein the means for employing comprises means for automatically employing the at least one pressure transducer to obtain multiple differential pressure measurements on the amount of coolant within the expansion tank, each differential pressure measurement comprising a difference in pressure between pressure in a liquid coolant portion of the expansion tank less pressure in a non-liquid portion of the expansion tank.

16. The system of claim 15, wherein the at least one pressure transducer comprises a differential pressure transducer for determining the multiple differential pressure measurement.

17. At least one program storage device readable by a machine, tangibly embodying at least one program of instructions executable by the machine for implementing a method of monitoring coolant within a cooling system, the method comprising:

employing at least one pressure transducer to obtain multiple pressure measurements related to an amount of coolant within an expansion tank of the cooling system; and

determining a rate of volume change of coolant within the expansion tank employing the multiple pressure measurements.

18. The at least one program storage device of claim 17, wherein the employing further comprises obtaining successive pressure measurements related to the amount of coolant within the expansion tank of the cooling system, the successive pressure measurements being taken at a known time interval, and wherein the determining comprises employing the successive pressure measurements at the known time interval to determine the rate of volume change of coolant within the expansion tank.

19. The at least one program storage device of claim 18, further comprising automatically determining an immediacy of action to be taken to service the cooling system based on the rate of volume change of coolant within the expansion tank.

20. The at least one program storage device of claim 17, wherein the employing comprises automatically employing the at least one pressure transducer to obtain multiple differential pressure measurements on the amount of coolant within the expansion tank, each differential pressure measurement comprising a difference in pressure between pressure in a liquid coolant portion of the expansion tank less pressure in a non-liquid portion of the expansion tank.

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